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# THE IMPACT OF PHYSICAL ACTIVITY ON FEMALE FERTILITY- A REVIEW OF CURRENT LITERATURE

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**ABSTRACT**

**Background.** Physical activity is a key lifestyle factor influencing fertility. As more women delay pregnancy, it's important they understand which modifiable factors can impact their reproductive health.
**Aim.** The aim of this article is to give women more accurate information. Present the data that is currently available to demonstrate how often, how intense, and which exercises are ideal for their reproductive system health when they participate in a sport that will help them keep or improve their fertility.
**Material and methods.** A comprehensive literature search was conducted using PubMed, GoogleScholar, and WebScience databases, focusing on the following keywords: female fertility, physical activity, reproduction health, lifestyle factors and exercise. The search covered publications from 2002 to 2025.
**Results.** Light to moderate physical activity (<6 METs) improves metabolic health, reduces stress, and supports hormonal balance, all of which benefit female fertility. Even vigorous activity (>6 METs) improves ovulation and conception rates in overweight or obese women. However, prolonged intense exercise combined with a low-calorie diet can disrupt the hypothalamic-pituitary-gonadal axis, leading to irregular periods, anovulation, or secondary amenorrhea.
**Conclusions.** One significant and modifiable component in the control and improvement of female fertility should be physical activity. However, light to moderate exercise is good for you and should be promoted, especially for women who have metabolic disorders or lead sedentary lives. The vigorous exercise may have a detrimental effect on reproductive health, apart from women who are overweight or obese.

**KEYWORDS**

Female Fertility, Physical Activity, Reproductive Health, Lifestyle Factors, Exercise

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## Introduction

Many couples of reproductive age who attempt to get pregnant experience infertility, which is the inability to conceive after 12 months of regular, unprotected sexual activity [1, 2]. Both men and women are affected by the issue of infertility, which affects 20% of couples who attempt to become parents but are unable [3]. Because female and male factors frequently coexist, it becomes essential to look into and treat infertility in both partners [4].

The total fertility rate in European countries is decreasing. It was the lowest rate reported in 2023, with 1.38 live births per woman [5]. This is influenced by many factors, one of the most significant is female fertility. A woman's reproductive life is greatly influenced by a number of elements working either alone or in combination [6]. Age is without a doubt the most significant element in determining a female's ability for fertility. The proportion of births to moms over 35 was 22%, and the average age of women in Australia at first birth in 2015 was 28.9 years, down from 28.1 years in 2005. This means that women are choosing to have children at an increasingly later age [7, 8]. Age is closely correlated with a female's ovarian reserve. To be able to estimate a woman's ovarian reserve, AMH (anti-mullerian hormone) levels are measured in gynaecological practice. Serum AMH levels represent the number of developing follicles that may be able to ovulate, they are measured to evaluate the functional ovarian reserve [9].

Age is obviously an integral role, but in recent years, women's lifestyles have received more consideration [10]. It is crucial to identify all modifiable factors that will allow fertility to be maintained at a high level for as long as possible. Women's fertility may be influenced by nutrition in either a positive or negative way, depending on the diet's quality and quantity characteristics [11]. Factors such as alcohol consumption, smoking and their harmful effects are already well established. Among these all factors, physical

activity has received considerable attention due to its well-established benefits for cardiovascular, metabolic, and mental health. However, its role in female fertility remains controversial and multifaceted.

This article aims to provide more precise informations for women. Present available data illustrating how frequent they should practise a sport that will best help them maintain their fertility, how intense it should be, which exercises will be best for the health of their reproductive system. If women are taking the decision to become mothers later and later, they need to be given as much guidance as possible to preserve their fertility and a healthy reproductive system. Information about the right exercises, their frequency and intensity is essential for this. Understanding the relationship between physical actvity and fertility may help in developing evidence-based lifestyle recommendations for women planning pregnancy, as well as for clinicians working in the field of reproductive medicine.

**Research materials and methods**

This review systematically analyzed literature from the past 23 years (2002–2025) on the impact of physical activity on female fertility. The methodology included: PubMed, GoogleScholar, and WebScience databases, using keywords such as: “Female fertility”, “Physical activity”, “Reproduction health”, “Lifestyle factors” and “Exercise”. Inclusion Criteria: Studies on the link between physical activity and fertility outcomes in humans, published in English, with quantifiable or qualitative fertility data. Exclusion Criteria: Studies with weak methodologies, animal studies unrelated to human fertility, and research older than 23 years.

**Research results**

The results suggest that physical activity can affect female fertility both positively and negatively, depending on the intensity, type and frequency of the exercises performed. While high-intensity exercise may harm reproductive function, moderate physical activity typically has positive consequences. Aerobic exercises are also much more beneficial.

Moderate physical exercise has been shown in several studies to promote healthy ovulatory function, enhance metabolic parameters, and perhaps shorten the time to pregnancy (TTP), especially in women who are overweight or have polycystic ovarian syndrome (PCOS). On the other hand, overtraining has been linked to hormonal imbalances, anovulation, and hypothalamic amenorrhea, particularly in women who are underweight.

The results of selected studies that examined the relationship between physical activity and fertility are summarised in Table 1.

**Table 1.** Summary of selected studies analysing the relationship between physical activity and female fertility.

| Study | Population | Type/Intensity of Activity | Fertility -Related Results |
|---|---|---|---|
| Rich-Edwards et al. (2002) | 116,671 nurses | Moderate to vigorous | Moderate activity reduced risk of ovulatory infertility |
| Morris et al. (2006) | 220 women undergoing IVF | Aerobic exercise (pre-IVF) | High activity reduced IVF success rates |
| Gudmundsdottir et al. (2009) | 3,887 women | High-intensity training | High-frequency intense activity associated with menstrual disorders |
| Wise et al. (2012) | 3,628 women | Moderate vs. vigorous | Activity improve fertility among overweight and obese women |

IVF- in vitro fertilisation

The studies took into account light, moderate and vigorous exercise intensity. The results of Rich-Edwards' large cohort study, intense activity was linked to an elevated risk of ovulatory infertility, especially for women with a BMI < 20. The study involved registered nurses aged 25–42 years. In contrast, moderate activity was found to lower the risk. This emphasizes how crucial body composition and energy availability are when analyzing how physical activity affects fertility [12].

The reproductive system may be impacted by differences in energy balance carried on by differences in physical activity. Anovulation is substantially more common in women who exercise daily at high intensities than with those who exercise less frequently or at lower intensities. These are the results in Norway, where

women were registered before the age of 45. Infertility issues were 3.2 times more common in women that were physically active most of the days than in those who were not [13]. What is more, another study of women undergoing their first cycle of IVF for the treatment of infertility found that regular exercise for 4 hours a week or more for 1 to 9 years was linked to a 40% reduced probability of a live birth. The study also showed that an almost threefold greater chance of cycle removal, and a twofold higher likelihood of implantation failure compared to women who did not report exercising [14].

A Danish cohort study of women aged 18 to 40 was another curious study. It revealed that, with the exception of those who were overweight or obese, intensive physical exercise was linked to lower fertility in all of the women [15]. This means that when considering the impact of exercise intensity on female fertility, women's BMI must be taken into account. Women with a high BMI (BMI ≥25 kg/m2) can have a positive impact on fertility even despite high-intensity exercise.

The most important feature in the above studies was the intensity or type of physical activity, e.g. aerobic (swimming, walking). The metabolic equivalent (MET) scale is frequently used to classify physical activity by intensity in research on women's health and fertility. The energy consumption during rest is one MET. Generally, activities are divided into three intensity levels: light (<3 METs), moderate (3–6 METs), and vigorous (>6 METs). This is necessary in order to compare the intensity of physical activity among adults [16]. Examples of physical activities classified according to MET values are presented in Table 2.

**Table 2.** MET Values for Common Physical Activities in Women. Table based on: Ainsworth et al. (2011), Compendium of Physical Activities.

| Type of Activity | Intensity | MET Value |
|---|---|---|
| Walking – slow | Light | 2.0–2.8 |
| Walking – quick | Moderate | 3.8–4.3 |
| Yoga | Light–Moderate | 2.5–3.0 |
| Pilates (moderate effort) | Moderate | 3.0–3.5 |
| Swimming (recreational) | Moderate–Vigorous | 6.0 |
| Jogging | Vigorous | 7.0 |
| Strength training | Moderate | 3.5–6.0 |
| Hiking | Vigorous | 6.0–9.0 |
| Stretching | Light | 2.3 |

On the basis of the above studies, light and moderate intensity exercise is safest and has a positive effect on fertility. Based on the appropriate MET value for a specific physical activity, women planning to become pregnant in the future can choose the right type of exercise to suit them.

**Regular exercise and women's general well-being**

In considering the impact of physical activity on female fertility, it is necessary to contemplate with the general impact of physical activity on the female body. It is frequently recognized that regular physical activity is a major factor in determining women's general health and quality of life. In this context, several important factors deserve further discussion, such as the cardiovascular system, body weight (mainly obesity reduction) and consequently mental health care. According to the World Health Organization (2020), individuals, including women of reproductive age, should engage in moderate-intensity aerobic exercise for at least 150 minutes each week. These guidelines highlight the benefits of exercise for mental and reproductive health in addition to its ability to prevent disease.

When thinking about the health of the cardiovascular system as a whole, it is essential to address the issue of appropriate blood pressure and cholesterol levels. The topic of hypertension is still a major public health problem because it can lead to the development of heart attacks, strokes, and early mortality [17]. It seems sense that, in addition to beginning medication, the first advice given when someone is diagnosed with hypertension is to modify their lifestyle and begin engaging in regular exercise. Patients with hypertension should engage in moderate-intensity aerobic exercise, per the guidelines set by the European Society of Cardiology. The greatest ways to prevent and treat hypertension and lower the risk of cardiovascular disease and death are to walk, jog, cycle, or swim for at least 30 minutes five days a week [18, 19, 20]. This was confirmed by randomised clinical trials in

which participants were randomly assigned to a 4-month lifestyle change programme. ABPM SBP was reduced in the aerobic group [21]. This emphasises the importance of the right kind of physical activity. Walking, swimming, or cycling are examples of moderate-intensity exercises that have been demonstrated to lower the risk of type 2 diabetes, obesity, and several types of cancer [22].

Women are statistically more likely than males to suffer from anxiety, depression, and mood-related problems throughout their lives, therefore regular physical activity has been associated to gains in mental health [23]. Women who regularly participate in moderate physical activity frequently report feeling less stressed, having happier moods, and having better cognitive abilities, such as memory and attention. Crucially, even mild-to-moderate exercise, like yoga, stretching, or walking, has been demonstrated to significantly improve anxiety and depression symptoms, particularly during hormonally sensitive life periods like perimenopause, postpartum, and premenstrual syndrome (PMS) [24, 25 ,26].

**Obesity among women and fertility**

The problem of excess weight among young women is very common. It has been found that young between the ages of 18 and 25 are especially susceptible to putting on weight, and they are putting on weight at a faster rate than their older colleagues [27]. This leads to the necessary to understand a relationship between excess body weight and women's reproductive health and fertility. Physical activity may prove to be equally helpful in both weight loss and increasing the chances of conception. A cohort study in Denmark found that even high-intensity exercise helps obese and overweight women to become pregnant [16].

Numerous reproductive dysfunctions, such as irregular menstrual cycles, anovulation, decreased conception rates, and worse outcomes with assisted reproductive technologies, are linked to excess obesity [28]. One important underlying reason is insulin resistance and compensatory hyperinsulinemia, which cause the ovaries to produce more androgen, resulting in hormonal imbalances that cause ovulatory dysfunction and polycystic ovarian syndrome (PCOS) [29]. Adipose tissue also functions as an endocrine organ, generating pro-inflammatory cytokines, resistin, and leptin, which can affect negatively on embryo implantation, endometrial receptivity, and ovarian function [30].

Regular physical activity also helps women with PCOS. In women with PCOS, exercise has been shown to lower serum testosterone levels, improve menstrual regularity, and increase egg quality in IVF cycles [31].

**Conclusions**

For women, physical activity is crucial to the health of their reproductive system. Numerous studies have demonstrated the beneficial effects of leading an active lifestyle, especially light to moderate intensity exercise (< 6 METs). Both sedentary lifestyle and vigorous exercise can be negative to fertility. Physical activity of a specific intensity has positive impact on hormonal balance, metabolic health, and ovulatory function. Weight is also a key factor when considering the impact of physical activity on female fertility. Vigorous exercise is harmful to the fertility of women with a low BMI and beneficial for women who are overweight or obese. Furthermore, every kind of exercise, regardless of intensity, increases female fertility in women who are overweight or obese.

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